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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SATOSHI ARAKAWA

Appeal 2009-010718
Application 10/714,851
Technology Center 2800

Decided: March 18, 2010

Before KENNETH W. HAIRSTON, JOHN C. MARTIN, and THOMAS S. HAHN, *Administrative Patent Judges*.

MARTIN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's Final Action rejecting claims 1-9. Dependent claim 10 stands objected to for

depending on a rejected claim and would be allowable if rewritten in independent form. Final Action 8. As explained below, all rejections of claims 8 and 9 have also been withdrawn, leaving only clams 1-7 for our consideration.

Oral argument was heard on March 9, 2010.[1]

We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

A. Appellant's invention

Appellant's invention is radiation-image read-out apparatus in which stimulated emission emitted from a radiation image convertor panel is detected to read a radiation image carried by the radiation image convertor panel. Specification 1:5-9.[2]

Appellant's Figure 2 is reproduced below.

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[1] "[A]rguments not presented in the brief or reply brief and made for the first time at the oral hearing are not normally entitled to consideration." MPEP § 1205.02 (8th ed., rev. 7, July 2008) (citing *In re Chiddix*, 209 USPQ 78 (Comm'r Pat. 1980)).

[2] References herein to Appellant's Specification are to the Application as filed rather than to corresponding Patent Application Publication 2004/0094731 A1.

FIG.2

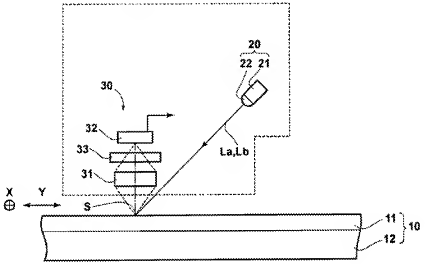

Figure 2 is an enlarged side view showing the stimulating beam projecting system and the detecting system employed in the radiation image read-out apparatus shown in Figure 1. *Id.* at 7:13-15. Stimulating light beam projecting system 20 projects a stimulating light beam onto a radiation image convertor panel 10. *Id.* at 8:8-12. A detecting system 30 detects stimulated emission emitted from the radiation image convertor panel 10 upon exposure to the stimulating light beam. *Id.* at 8:12-14.

Figure 3 is reproduced below.

FIG.3

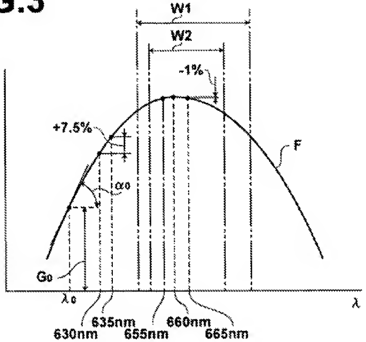

Figure 3 shows the relation between the wavelength of the stimulating light and the intensity of the stimulated emission emitted from the radiation image convertor panel. *Id.* at 11:2-5. This figure shows that a change in the stimulating wavelength from 660 nm (corresponding to the peak emission value) to 665 nm will result in a reduction of only about 1.0% in the intensity of the emitted light. *Id.* at 12:16-18. By our calculation, dividing this 1.0% intensity change by 5 nm, which is the difference between these two stimulating wavelengths, yields a ratio of the change of the intensity of the stimulated emission to the change in the stimulating wavelength of 0.20%/nm. In the range W1 in Figure 3, the ratio of the change of the intensity of the stimulated emission to the change of the wavelength of the stimulating light is not larger than 1.0%/nm and not smaller than -1.0%/nm.

Id. at 12:24-13:1. W2 designates a range in which this ratio is not larger than 0.5%/nm and not smaller than -0.5%/nm. Id. at 13:5-9.

B. The claims

Claim 1, the sole independent claim before us, reads:

1. A radiation image read-out apparatus which comprises:

a radiation image converter panel,

a stimulating light projecting means which projects stimulating light onto the radiation image converter panel, and

a detecting means which detects stimulated emission emitted from the radiation image converter panel upon exposure to the stimulating light beam and reads out a radiation image recorded on the radiation image converter panel,

wherein the stimulating light projecting means projects, onto the radiation image converter panel, stimulating light in a wavelength range where the rate of change of the intensity of the stimulated emission to a given change of the wavelength of the stimulating light is not larger than 1.0%/nm and is not smaller than -1.0%/nm; and

and wherein the wavelength of the stimulable [i.e., stimulating] light fluctuates in a manner that would cause a change in the intensity of the stimulable [i.e., stimulated] emission.

Claims App. (Br. 19).

Dependent claim 2 recites values of 0.5%/nm and -0.5%/nm.

C. The references

The Examiner relies on the following references:[3]

Nakamura	US 4,780,376	Oct. 25, 1988
Bradley	US 5,043,991	Aug. 27, 1991
Neyens et al. ("Neyens")	US 5,517,034	May 14, 1996

Read-out of photostimulable latent fluorescent images, Research Disclosure Journal (Dec. 1989) ("Research Disclosure")

D. The rejections[4]

Claims 1, 2, and 4-7 stand rejected under 35 U.S.C. § 103(a) for obviousness over Nakamura in view of Neyens and Bradley. (Answer 3).

Claim 3 stands rejected under 35 U.S.C. § 103(a) for obviousness over Nakamura in view of Neyens, Bradley, and Research Disclosure. *Id.* at 7.

THE ISSUE

One issue raised by Appellant's arguments regarding the rejection of claim 1 is whether the Examiner has established any motivation for combining the reference teachings.

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[3] Because the availability of the references as prior art against Appellant's claims is not at issue, only the issue or publication dates are being provided.

[4] The rejections as stated herein differ from those presented in the Final Action, which were revised at page 2 of the Advisory Action mailed August 28, 2006, in response to an Amendment Under 37 C.F.R. § 116 received August 14, 2006. Also, of the grounds stated in the Advisory Action, the rejections of claims 8 and 9 under the first and second paragraphs of 35 U.S.C. § 112 were withdrawn at page 2 of the Answer.

Another issue is whether the combined reference teachings satisfy the recited range of the ratio of the change in stimulated emission intensity to the change in stimulating wavelength.

ANALYSIS

A. Claim 1

Regarding claim 1, Appellant does not dispute the Examiner's finding that Figure 5 of Nakamura shows the recited "radiation image converter panel," "stimulating light projecting means," and "detecting means" (Answer 4). Nor does Appellant challenge the Examiner's finding that the emission characteristic curves shown in Figure 1 of Nakamura and Figure 1 of Neyens each have a peak emission output value corresponding to a particular stimulating wavelength.

Figure 1 of Nakamura is reproduced below.

FIG. 1

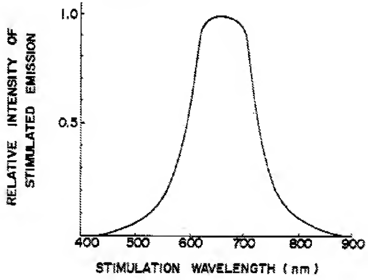

Figure 1 shows a stimulation spectrum of a CsCl·RbBr:0.001Eu^{2}+ phosphor in accordance with Nakamura's invention. Nakamura, col. 3, ll. 19-22. Nakamura discloses that various types of lasers, including semiconductor lasers, which are preferred, can be used as the source of a single wavelength for stimulating the phosphor. *Id.* at col. 9, ll. 30-48.

For a teaching of selecting the stimulation wavelength to be equal to the particular wavelength that maximizes the emission output, the Examiner (Final Action 6) relies on Neyens. Appellant, after agreeing that "Neyens discloses that it is preferable to have a stimulable light source set such that stimulable emission from is maximized" (Br. 14), correctly points out that Neyens fails to teach or suggest (a) the recited "stimulating light in a wavelength range where the rate of change of the intensity of the stimulated emission to a given change of the wavelength of the stimulating light is not larger than 1.0%/nm and is not smaller than -1.0%/nm" or (b) the recited "wherein the wavelength of the stimulable [i.e., stimulating] light fluctuates in a manner that would cause a change in the intensity of the stimulable [i.e., stimulated] emission." (Claim 1.) The Examiner relies on Bradley to show that both of these limitations inherently will be satisfied when Nakamura is modified in view of Neyens so as to employ a semiconductor laser that provides a stimulating wavelength that corresponds to the peak emission output value (Answer 6).

Regarding the second of the above requirements (i.e., "the wavelength of the stimulable [i.e., stimulating] light fluctuates in a manner that would cause a change in the intensity of the stimulable [i.e., stimulated] emission"),

the Examiner (Final Action 8) cites the following passage in Bradley to show that the wavelength emitted by a semiconductor laser inherently drifts with changes in temperature:

> The range of operating temperatures over which diode lasers normally operated is about 20° C. to 70° C. The variation in wavelength is about 5 Å/° C. for laser diodes with conventional cavities, and about 1 Å/° C. for DFB [distributed feedback[5]] or DBR [distributed Bragg reflector[6]] lasers. Therefore, the wavelength will drift about 50 Å [5 nm[7]] over the required temperature range for even the best stabilized lasers.

Bradley, col. 1, l. 64 – col. 2, l. 2. Appellant agrees that "Bradley discloses that lasers tend to have a wavelength drift over a temperature range." (Br. 13.) Based on this teaching, the Examiner concluded that

> it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a known conventional laser (e.g., a stabilized semiconductor laser having a laser wavelength located at the maximum of the stimulation spectrum and wherein the laser wavelength drifts $\leq$5 nm with operating temperature, in order to optimize photostimulation of the radiation image converter panel) as the unspecified laser in the apparatus of Nakamura.

(Answer 7.) Thus, we understand the Examiner's position to be (1) that it would have been obvious to modify Nakamura by selecting a semiconductor (e.g., diode) laser that has a wavelength corresponding to the phosphor's peak emission output value and (2) that wavelength emitted by the

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[5] Bradley, col. 1, l. 37.
[6] Bradley, col. 1, l. 38.
[7] *See* Reply Brief 5 (referring to "wavelengths ±2.5 nm (50 angstroms)").

semiconductor laser *inherently* will drift with temperature. Appellant's argument that this position is unsound because "the Examiner fails to provide any objective documentation taken from the references themselves (Nakamura, Neyens, or Bradley) that provides justification for the Examiner's proposed motivation to combine" (Br. 13) is not explained and not understood.

Turning now to the requirement of claim 1 for "stimulating light in a wavelength range where the rate of change of the intensity of the stimulated emission to a given change of the wavelength of the stimulating light is not larger than 1.0%/nm and is not smaller than -1.0%/nm," the Examiner has provided (Answer 5) an annotated version (reproduced below) of the stimulation spectrum of Nakamura's Figure 1 in order to show that this requirement inherently will be satisfied by Nakamura as modified above.

FIG. 1

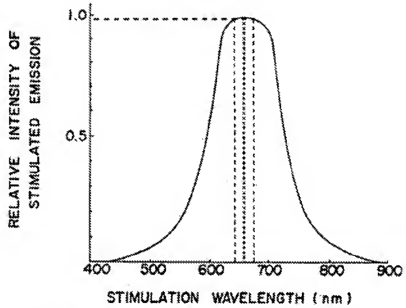

Fig. 1 of Nakamura with lines added to show the range of stimulation wavelengths wherein the stimulated emission intensities are within 99.5% of the peak stimulated emission intensity (I_{EM-max}).

Specifically, the Examiner found that "[i]t is . . . clear from Fig. 1 of Nakamura that the stimulated emission intensity changes less than 0.5% (relative to the peak stimulated emission intensity I_{em-max}) when the stimulation wavelength is changed ±2.5 nm (from the stimulation wavelength λ_{s-max})" (Answer 6). We assume the Examiner's choice of a stimulation wavelength variation of ±2.5 nm is based on Bradley's above-quoted disclosure that the wavelength of a diode laser can drift about 50Å (5 nm) over the required operating temperature range.

Appellant (Reply Br. 5) argues that the Examiner's reliance on the stimulation spectrum in Nakamura's Figure 1 is misplaced because its vertical axis represents the "relative intensity" of stimulated emission rather

than the claimed "intensity" of the stimulated emission, which means the Examiner "can only guess as to the values on the spectrum which are within 1.0%/nm and -1.0%/nm of the peak value, and can further only guess the emission values in FIG. 1 of Nakamura for wavelengths ±2.5 nm (50 angstroms) from the wavelength of the peak emission." Appellant further argues (*id.*) that "[t]he Examiner's basic error is imparting scale to the disclosure of Nakamura which cannot be done absent a specific teaching," citing *Hockerson-Halberstadt, Inc. v. Avia Group Intern., Inc.*, 222 F.3d 951, 956 (Fed. Cir. 2000), which states that "it is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue." These arguments are unpersuasive because claim 1 does *not* require that the requirement of claim 1 for "stimulating light in a wavelength range where the rate of change of the intensity of the stimulated emission to a given change of the wavelength of the stimulating light is not larger than 1.0%/nm and is not smaller than -1.0%/nm range" be satisfied for the *entire* range of variation of the stimulating wavelength. As a result, it is only necessary for Figure 1 to demonstrate that this claim requirement is satisfied for *some* amount of variation in the stimulation wavelength, an amount that can be much less than ±2.5 nm. We find that Nakamura's Figure 1 prima facie provides such a showing. Even though Nakamura does not disclose the scale of the stimulation spectrum depicted therein, it is evident from the shape of the spectrum curve that shifting the stimulating wavelength by a miniscule amount (e.g., 0.001 nm) from the wavelength (i.e., 650 nm) that provides peak

emission value will change the emission value by less than 1%/nm of the change in the stimulating wavelength.

For the foregoing reasons, we are affirming the rejection of claim 1 for obviousness over Nakamura in view of Neyens and Bradley and also the rejection on that ground of dependent claims 2 and 4-7, which are not separately argued. 37 C.F.R. § 41.50(c)(1)(vii) (2006).

B. Claim 3

Appellant argues (Br. 14) that dependent claim 3, which stands rejected for obviousness over Nakamura in view of Neyens, Bradley, and Research Disclosure, is patentable because Research Disclosure does not teach the claim 1 subject matter that is allegedly lacking in Nakamura, Neyens, and Bradley. Because we have determined that this alleged deficiency does not exist, we are affirming the rejection of claim 3.

DECISION

The rejection of claims 1, 2, and 4-7 under 35 U.S.C. § 103(a) for obviousness over Nakamura in view of Neyens and Bradley is affirmed, as is the rejection of claim 3 under 35 U.S.C. § 103(a) for obviousness over Nakamura in view of Neyens, Bradley, and Research Disclosure.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1). *See* 37 C.F.R. § 1.136(a)(1)(v) (2009).

AFFIRMED

gvw

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